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EXAMINER

NGUYEN, N

ART UNIT PAPER NUMBER

1754

DATE MAILED: 11/07/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/212,107

Applicant(s)

ARNO

Examiner

N. M. NGUYEN

Group Art Unit

1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three (3) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- ☒ Responsive to communication(s) filed on Sept 13, 2000
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1 - 50 is/are pending in the application.
- Of the above claim(s) 1 - 20, 22 - 25, 28 - 50 is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 21, 26 - 27 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_
- ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 58 ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892 ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948 ☐ Other \_\_\_\_\_

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### **DETAILED ACTION**

Applicant's election of Group V and species (c) in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-20, 22-25, 28-50 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions and nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.

Claims 21, 26-27 are examined in this Office action.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 26-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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In claim 26, it is unclear if the limitation in brackets is positively required, i.e. "{Joe Sweeney comments:....in the aqueous scrubbing liquid}"

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Dahlstrom et al (4,147,756).

Dahlstrom '756 discloses a system for removing gaseous sulfur dioxide and chloride components from a gas stream (note claim 1). From Figure 1, in the scrubbing device 11, the gas inlet 13 is connected in communication with the upper end of the housing of the scrubbing device and the introduced gases flow downward therefrom to an outlet conduit 14. The scrubbing liquid is discharged in the housing by means such as spray nozzles 15 and flows downwardly cocurrent with the gas flow (note column 3, lines 7-13). The system further comprises a scrubber 51 connected to receive, via the conduit 14, the gases treated in scrubber 11 (note column 4, lines 23-26). In scrubber 51, the scrubbing liquid is discharged in the scrubber housing by liquid outlet means 53, and flows downward countercurrent to the gas flow (note column 4, lines 47-55).

The process as disclosed in Dahlstrom '756 anticipates the claimed process.

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Claims 21, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Macedo et al (5,405,590).

Macedo '590 discloses a process for cleaning exhaust off-gas from a thermal processing unit containing contaminants, the process comprising:

passing exhaust off-gas through an initial wet exhaust off-gas scrubber unit having a first basic solution containing at least one base reagent and water,

contacting the exhaust off-gas with a spray of said solution to cool the exhaust off-gas by partial evaporation,

reacting at least one contaminant from the exhaust off-gas with the base reagent in a liquid stream,

said partial evaporation and reaction resulting in concentration and precipitation of said at least one contaminant from the exhaust off-gas,

further introducing the exhaust off-gas to at least one secondary scrubbing unit having a second basic solution containing at least one base reagent and water resulting in further removal of contaminants from the exhaust off-gas,

removing solid precipitate from the initial exhaust off-gas scrubber unit in the form of a wet sludge (note claim 1).

As shown in the Figure, the off-gas entering scrubber 20 at inlet 20A encounters a high velocity, high pressure water/reagent spray jet 41 (note column 3, lines 65-67). During normal operations, especially when acid gases are being scrubbed, the reaction of the scrubbing reagents

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with acid contaminants occurs above the spray nozzles 41 where a misty curtain of the solution is normally formed (note column 4, lines 30-37). The purified off-gas then travels up through conduit 50 into a second stage scrubbing unit 80 (note column 4, lines 7-8). The off-gas exhaust is further scrubbed by a reagent solution sprayed downward from spray nozzles 106. Spray nozzles 106 produce a high velocity solution curtain across the top cross section of the scrubber 80 which effectively removes the majority of the leftover contaminants from the exhaust gases emitting from scrubber 20.

Macedo '590 fairly teaches that acid gases are removed in the first scrubber and the leftover contaminants are removed in the second scrubber. The leftover contaminants would include water scrubbable components other than acid gas components as required in the instant claim 26.

As evidenced by the figure, Macedo '590 fairly teaches that in the first scrubber, the scrubbing liquid and the exhaust off-gas are flowing concurrently and in the second scrubber, they are flowing countercurrently.

The process of Macedo '590 anticipates the claimed process.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21, 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macedo '590.

Macedo '590 discloses a process for scrubbing an exhaust off-gas as mentioned in the above rejection.

The difference is Macedo '590 does not disclose the size of the second scrubber as compared to the first scrubber.

However, Macedo '590 discloses that the first scrubber is used to remove acid gases and the second scrubber is used to remove the leftover contaminants. Thus, it would have been obvious to one of ordinary skill in the art to optimize the size of the two scrubbers in order to obtain the best results, i.e., for removing the most contaminants with the lowest total cost.

Claims 21, 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dahlstrom '756.

Dahlstrom '756 discloses a process as stated in the above rejection.

In the process of Dahlstrom '756, the first scrubber removes hydrogen chloride gas and other chlorine components. The second scrubber removes sulfur oxides. The second scrubber would also remove any other residual contaminants in order to produce an exhaust gas which is suitable for discharging into the atmosphere.

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The difference is Dahlstrom '756 does not disclose the size of the second scrubber.

It would have been obvious to one of ordinary skill in the art to optimize the size of the two scrubbers in order to obtain the best results, i.e., for removing the most contaminants with the lowest total cost.


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References AC, AD, AE as cited on the 1449 form (filed March 22, 1999) were not considered because no copies <sup>of these references</sup> were found in the case.

Any inquiry concerning this communication should be directed to Ngoc-Yen Nguyen at telephone number (703) 308-2536.

The fax phone number for this Group is (703) 305-3599 (for OFFICIAL After Final amendment only) or (703) 305-5408 (for all other OFFICIAL faxes). UNOFFICIAL fax can be sent to (703) 305-6078.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

N. M. Nguyen  
November 5, 2000

  
N. M. Nguyen  
Primary Examiner  
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